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Seed and Plant Introduction and Distribution,

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DROUGHT-RESISTANT ALFALFAS (*Medicago sativa*).

[Instructions adapted to western Nebraska, western Kansas, eastern Colorado, Oklahoma, and western Texas.]

Alfalfa has long been grown in the more humid portions of the West, but it has been slow to spread into the more arid portions even under the improved methods of culture which have been developed during the past decade. The principal difficulty has been the lack of necessary moisture. The drought-resistant alfalfas which have been introduced include the following:

Native dry-land strains.—Seed of this class of alfalfa is secured from non-irrigated fields in the semiarid sections of the country. It is usually ordinary alfalfa which has been grown for years under dry-land conditions. In this way the drought-resistant plants alone have survived.

Turkestan alfalfa.—This is secured from Turkestan and has been found to be generally more drought resistant than the ordinary alfalfa. It is not usually equal to ordinary alfalfa under irrigation or in sections with sufficient rainfall for full crops of ordinary alfalfa.

Sand lucern.—A hardy, drought-resistant strain adapted to a wider range of soils than ordinary alfalfa. It is proving equal to or superior to any of the strains now being grown for drought or cold resistance. In testing this or the other strains it is important that they all be seeded side by side under the same conditions. It is also very desirable that a plot of ordinary alfalfa be sown alongside the other plots to serve as a basis of comparison.

Soil requirements.—Almost any soil which will grow other field crops will be satisfactory for alfalfa. In the very dry sections it is an advantage to locate the alfalfa field so that it will catch the water from adjoining lands during the heavy rains. It must be remembered, however, that alfalfa will not usually withstand flooding for more than a day at a time without serious injury.

Preparation of the soil.—This is, perhaps, the most important point in getting a successful stand of alfalfa. It is necessary to have the soil well settled, but with a dust mulch on top to conserve the moisture. Alfalfa may be planted on sod land after one crop has been grown. This method is advisable if spring seeding is to be practiced, as is generally necessary in western Nebraska and northward.

Seeding.—Spring seeding is advisable except in the southern fourth of the area above indicated. The soil should be very free from weeds, so that they will not trouble the young plants during their first summer. In the north fall seeding is likely to winterkill, but throughout the southern portion of the region it is possible for the plants to make sufficient growth before cold weather to enable them to withstand the winter and start the following spring with a healthy growth that gives them a decided advantage over the weeds, which are comparatively late in starting.

The seed should be sown broadcast or drilled at the rate of 8 to 12 pounds of good seed per acre. A more even stand can be secured by dividing the seed and sowing one-half each way across the field. If sown broadcast, a harrow should be used to cover the seed an inch and a half to 2 inches deep. If the soil is sandy and likely to blow before the plants can make sufficient growth, a half bushel of oats per acre may be seeded with the alfalfa.

Subsequent treatment.—When the alfalfa starts to bloom it should be clipped back, with the cutter bar of the mower set high. If cut low, the plants are slow to survive the shock of cutting and are more likely to be choked out by the weeds. If the growth is light enough not to smother the alfalfa, it may be left on the field; otherwise it should be raked up and removed. A light cutting of hay may sometimes be procured in the early autumn. The alfalfa should be several inches high when winter sets in, so that snow may be caught and the crowns protected from winterkilling. At cutting time the basal shoots should be well started, but not high enough to be clipped by the mower.

Need of experimenting.—Alfalfa is so peculiar in its requirements that several trials are sometimes necessary before one becomes sufficiently familiar with it to be at all sure of securing a stand. These early failures are discouraging, especially when made on a large scale. For this reason it is recommended that the first attempts be made upon a rather small scale. The greatest possible amount of experience can be obtained by dividing the selected area into a number of subdivisions and giving each a somewhat different treatment as regards preparation of the soil, time and rate of seeding, depth of covering, etc. Each plot will give one year's experience in regard to the behavior of alfalfa under the conditions present. The several plots will give at the end of the first year the experience which would ordinarily require a number of seasons to procure. The successful plots will clearly show what it is necessary to do in order to produce a successful stand. The plots which prove a failure will show just as clearly what not to do. The treatment giving the best results can be applied upon the increased acreage the following season.

A rough diagram of the experimental plot should be made at the time the plots are laid out. The treatment given each should be carefully recorded and further notes made from time to time as to the success of the diffrent methods of treatment. This will enable one to refer to the work at any future time. The results should be made available to all interested neighbors.

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